



ESTHETIC REHABILITATION WITH MARYLAND BRIDGE

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ABSTRACT Missing teeth in the anterior region has a negative impact on the patient's appearance and directly influence patient's self-confidence. Resin bonded fixed partial denture is a minimally invasive treatment option that can restore function and aesthetics in such patients while also providing a high level of patient satisfaction. Maryland bridges are the resin-retained bridges which are most commonly used to replace single missing anterior tooth. This case report signifies the management of a single missing tooth in anterior region of upper jaw with Maryland bridge as a treatment modality.

KEYWORDS : Maryland bridge, Esthetics, Minimally invasive, Resin bonded.

INTRODUCTION:

Restoration of missing maxillary lateral incisor is of utmost importance as the missing space influence the patient esthetically and psychologically, specially the young patients. (Negi et al.,n.d.) When treating an anterior tooth, a number of dental issues must be addressed, including shade (hue, chrome, and value), morphology, gingival contours, bone levels, and occlusion. Furthermore, a decision between a fixed prosthesis, removable prosthesis, and an implant needs to be determined. (Binsu et al.,n.d.). In 2022 Chahal reported that long term usage of removable prosthesis may result in bone resorption and flattening of the interdental papillae of adjacent teeth. It can, however, be utilised as an interim prosthetic for initial aesthetics. The next option that can be explored is a fixed partial denture which requires significant tooth reduction. Implants are currently one of the most acceptable and conservative option for replacing the missing teeth, but its placement depends on various factors including amount of bone available, medical conditions, financial factor, and patient wishes. (Pratyusha et al.,2011) Hence, more conservative and less invasive resin bonded prosthesis may be the treatment of choice for such individuals to replace the missing tooth while preserving the remaining alveolar ridge and soft tissue. (Negi et al. ; Chahal et al.,2022).

The 'Maryland Bridge' was developed at the University of Maryland. The bridge retention has been enhanced by the development of resin cements which bond chemically to both the tooth surface and the etched metal alloy. It provides micro mechanical retention. Thompson and Livaditis in 1983 developed the technique of electrolytic etching of Ni-Cr and Co-Cr alloy. However, the Maryland bridges are alloys specific. It is used only for non-precious alloys because precious alloys cannot be etched to provide micromechanical retention. (Ahmad et al.,2017).

Nowadays patients are not only getting more concerned about esthetics, but they are also frequently opting for more conservative and less invasive procedures. (Chahal et al.,2022) This article presents a case report on Maryland Bridge.

CASE REPORT:

A 16-year-old female patient reported to the Department of Pediatric and Preventive Dentistry with the chief complaint of missing upper anterior teeth and the unesthetic appearance due to the missing teeth. Patient gave history of extraction due to the trauma 2 months back. On intra-oral examination, upper left central incisor was missing (Figure 1).

Gingival defect was also noted in the same region along with gingival

recession around 21. The mesiodistal width of 21 was similar to that of 11 while the crown height space of 21 was more due to the gingival defect. Intraoral periapical radiograph revealed healthy adjacent abutment teeth. All the treatment options including implant, conventional fixed dental prosthesis, removable partial denture, and resin bonded bridges were given to the patient. Patient was not willing for any invasive treatment option. She was willing for fixed prosthesis with minimal tooth reduction; thus, a resin bonded bridge was chosen as the treatment option for the patient. Diagnostic impressions of the maxillary and the mandibular arch were made using irreversible hydrocolloid impression material (Imprint alginate, Dental Impression Material, DPI, India) and poured in dental stone (Kalabhai Karson, Batch No. 31105; Mumbai, India) to obtain the diagnostic cast. Diagnostic wax-up was done on the diagnostic cast. It revealed the pontic would be longer in length than the adjacent central incisor due to the presence of gingival defect. So, white porcelain was planned to be used in cervical third of the pontic.



Figure-1: Intraoral preoperative photograph showing missing 21



Figure-2: Cementation of Maryland bridge with resin cement.

Shade selection was done. After that Tooth preparation was done on the lingual surfaces of the right central incisor and left lateral incisor (11 and 22). Final impression was made using addition silicone putty impression and model was poured in die stone (Ultrarock, Kalabhai) and was sent to the laboratory. Subsequently, trial fitting of the prosthesis was carried out in patient's mouth and then, aesthetics and speech were evaluated. The final prosthesis was luted using the self-etch resin cement (Rely X U200, 3M ESPE, Germany) on the abutment teeth (Figure 2, Figure 3). Post cementation instructions were given to the patient. Patient was kept on follow-up at regular intervals.



Figure-3: Final prosthesis in situ.

DISCUSSION:

Conservation of sound tooth structure has been a major concern in dental practice (Ghimire P et al. 2021). Fixed partial prosthesis necessitates extensive abutment preparation and implant therapy is an expensive treatment option available once the patient had achieved osseous maturation. Treatment with Maryland Bridge prosthesis can serve as suitable alternative for protecting the patient from the negative consequences related to edentulous space and invasive replacement procedures like fixed dental prosthesis and implants. (Sharma et al., 2022). In 2022 Chahal reported that careful case selection, meticulous design planning, precise tooth preparation, and prudent cementation can all contribute to long term success of Maryland bridges.

In this case, tooth preparation was done according to the guidelines for fabrication of wings of Maryland Bridge on abutment tooth leaving intact 1mm of incisal enamel and light chamfer finish line was given 1mm supra-gingivally. Prosthetic approach was used as an alternative to treat the gingival tissue defect.

Maryland bridges have several advantages including minimal tooth preparation conserving the enamel, minimal pulpal trauma, decreased potential for gingival irritation, single path of insertion preventing displacement, improved esthetics, patient satisfaction, and precludes the use of local anaesthetic. However, it also has certain disadvantages including its technique sensitive application, caries, periodontal disease but these occur relatively rarely. (Chahal et al., 2022; Ghimire et al., 2021) The most prevalent technical reason for Resin bonded bridge failure is debonding which can be minimized by the using resin cement. For precaution, the patient was cautioned of this risk and instructed to report any loosening of the bridge immediately (Durey KA et al 2011).

CONCLUSION:

One of the fundamental concepts of fixed prosthodontic tooth preparation is the preservation of tooth structure. Maryland bridge serves best in this regard because it is easy, conservative, non-invasive, and cost-effective treatment choice for improving aesthetics. Meticulous attention to detailing and proper case selection allows the Maryland Bridge to continue as a popular conservative restoration alternative.

Summary:

Although implant-supported prostheses are ultimately the best solution for patients with missing incisors, until such patients have reached full physical maturity, a transitional restoration is often necessary. The Maryland Bridge is such a restoration. It requires minimal preparation of the abutment teeth and provides excellent esthetics.

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